

AMENDMENTS TO THE CLAIMS

The following is a complete revised listing of the revised claims with a status identifier in parenthesis.

LISTING OF CLAIMS

1. (Currently Amended) A computer readable medium ~~having~~ storing a data structure for managing reproduction of video data ~~having at least one reproduction path~~, comprising:

~~a data area directory for storing stream files, each stream file including video data, each stream file including a portion of video data associated with one of a common reproduction path and a particular reproduction path, portion common to the reproduction paths and a each particular reproduction path being one path among the multiple reproduction paths of in the video data;~~

~~a playlist area directory for storing a playlist file, the playlist file for identifying the common reproduction path portion and the particular reproduction path to reproduce, the playlist file including at least one playitem, each the playitem indicating a playing interval from in-point until out-point, the in-point and out-point pointing to time positions on a time axis of the video data; and~~

~~a clip information area directory for storing management information clip information files for managing reproduction of the video data, the management information including clip information files, each one of the clip information files being associated with a corresponding a different one of the stream files, each clip information file including a map for the associated stream file, the map mapping a presentation time stamp to an address for at least one entry point in the associated stream file, wherein the clip information file, the playlist file and the stream file is logically separate and include different file extensions~~

wherein the video data includes data packets and each data packet has a packet number that differentiates one data packet from another data packet, and the map identifies the address for the at least one entry point by identifying the packet number of the data packets, and a path change among the multiple reproduction paths is performed at the entry point identified by the map.

2. (Previously Presented) The computer readable medium of claim 1, wherein the stream files are interleaved.

3. (Currently Amended) The computer readable medium of claim 2, wherein the stream files associated with the particular reproduction paths are interleaved between the stream files associated with the common reproduction paths ~~portion~~.

4. (Currently Amended) The computer readable medium of claim 2, wherein the ~~stream files have a size to prevent a reproducing apparatus buffer from under-flowing during reproduction of the stream files~~ common reproduction path and the particular reproduction path are respectively divided into one or more interleaving units, the interleaving units include packets associated with entry points, and a size of the interleaving unit and a number of entry points in the interleaving unit are determined to meet a buffer occupancy of a reproducing apparatus.

5. (Currently Amended) The computer readable medium of claim 4, wherein the ~~stream files have a size and the number of entry points are determined to prevent the reproducing apparatus a buffer from under-flowing or over-flowing during reproduction of the stream files.~~

6. (Currently Amended) The computer readable medium of claim 5, wherein more than one stream file is associated with ~~a same one of a common reproduction path portion and a particular one reproduction path when the one of the common reproduction path portion and the particular reproduction path includes data exceeding a stream file size to prevent the reproducing apparatus buffer from overflowing during reproduction of the stream files.~~

7-8. (Cancelled)

9. (Previously Presented) The computer readable medium of claim 1, wherein the stream files have a size to prevent a reproducing apparatus buffer from underflowing during reproduction of the stream files.

10. (Previously Presented) The computer readable medium of claim 1, wherein the stream files have a size to prevent the reproducing apparatus buffer from overflowing during reproduction of the stream files.

11. (Cancelled)

12. (Currently Amended) A method of recording a data structure for managing reproduction of video data ~~having at least one reproduction path~~ on a recording medium, comprising:

recording stream files ~~on the recording medium, of a data area of the recording medium, each stream file including video data, each stream file each stream file including a portion of video data associated with one of a common reproduction path and a particular reproduction path, portion common to the~~

~~reproduction paths and a particular reproduction path among the reproduction paths each particular reproduction path being one path among multiple reproduction paths in the video data;~~

recording a at least one playlist file ~~on~~ ~~in~~ ~~a~~ playlist area of the recording medium, ~~the~~ ~~playlist~~ ~~file~~ ~~for~~ ~~identifying~~ ~~the~~ ~~common~~ ~~reproduction~~ ~~path~~ ~~portion~~ and ~~the~~ ~~particular~~ ~~reproduction~~ ~~path~~ ~~to~~ ~~reproduce~~, the playlist file including at least one playitem, ~~each~~ the playitem indicating a playing interval from in-point until out-point, the in-point and out-point pointing to time positions on a time axis of the video data; and

recording ~~management~~ ~~information~~ clip ~~information~~ files ~~on~~ ~~the~~ ~~recording~~ medium, the ~~clip~~ ~~information~~ files ~~for~~ ~~managing~~ ~~reproduction~~ of the video data ~~in~~ ~~clip~~ ~~information~~ ~~files~~, ~~the~~ ~~clip~~ ~~information~~ ~~files~~ ~~recorded~~ ~~in~~ ~~a~~ ~~clip~~ ~~information~~ ~~area~~ ~~of~~ ~~the~~ ~~recording~~ ~~medium~~, each one of the clip information files being associated with ~~a~~ ~~corresponding~~ a ~~different~~ one ~~of~~ ~~the~~ stream ~~files~~, each clip information file including a map for the associated stream file, the map mapping a presentation time stamp to an address for at least one entry point in the associated stream file,

wherein ~~the~~ ~~video~~ ~~data~~ ~~includes~~ ~~data~~ ~~packets~~ and ~~each~~ ~~data~~ ~~packet~~ ~~has~~ ~~a~~ ~~packet~~ ~~number~~ ~~that~~ ~~differentiates~~ ~~one~~ ~~data~~ ~~packet~~ ~~from~~ ~~another~~ ~~data~~ ~~packet~~, ~~and~~ ~~the~~ ~~map~~ ~~identifies~~ ~~the~~ ~~address~~ ~~for~~ ~~the~~ ~~at~~ ~~least~~ ~~one~~ ~~entry~~ ~~point~~ ~~by~~ ~~identifying~~ ~~the~~ ~~packet~~ ~~number~~ ~~of~~ ~~the~~ ~~data~~ ~~packets~~, ~~and~~ ~~a~~ ~~path~~ ~~change~~ ~~among~~ ~~the~~ ~~multiple~~ ~~reproduction~~ ~~paths~~ ~~is~~ ~~performed~~ ~~at~~ ~~the~~ ~~entry~~ ~~point~~ ~~identified~~ ~~by~~ ~~the~~ ~~map~~, wherein ~~the~~ ~~clip~~ ~~information~~ ~~file~~, ~~the~~ ~~playlist~~ ~~file~~ ~~and~~ ~~the~~ ~~stream~~ ~~file~~ ~~is~~ ~~logically~~ ~~separate~~ ~~and~~ ~~include~~ ~~different~~ ~~file~~ ~~extensions~~.

13. (Currently Amended) A method of reproducing a data structure for managing reproduction of video data ~~having at least one reproduction path~~ recorded on a recording medium, comprising:

~~reproducing stream files from a data area of the recording medium, each stream file including video data, each stream file associated with one of a portion common to the reproduction paths and a particular reproduction path among the reproduction paths; and~~

~~reproducing a at least one playlist file recorded in a playlist area of from the recording medium, the playlist file for identifying the common reproduction path portion and the particular reproduction path to reproduce, the playlist file including at least one playitem, each the playitem indicating a playing interval from in-point until out-point, the in-point and out-point pointing to time positions on a time axis of the video data;~~

~~reproducing management information at least one clip information file from the recording medium, the clip information file for managing reproduction of the video data from clip information files, the clip information files being recorded in a clip information area of the recording medium, each one of the clip information files associated with a corresponding a different one of stream files, each clip information file including a map for the associated stream file, the map mapping a presentation time stamp to an address for at least one entry point in the associated stream file, wherein the clip information file, the playlist file and the stream file is logically separate and include different file extensions, and~~

reproducing at least one stream file from the recording medium, each stream file including a portion of video data associated with one of a common reproduction path and a particular reproduction path, each particular reproduction path being one path among multiple reproduction paths in the video data,

wherein the video data includes data packets and each data packet has a packet number that differentiates one data packet from another data packet and the map identifies the address for the at least one entry point by identifying the packet number of the data packets, and a path change among the multiple reproduction paths is performed at the entry point identified by the map.

14. (Currently Amended) An apparatus for recording a data structure for managing reproduction of video data having at least one reproduction path on a recording medium, comprising:

an optical a recording unit configured to record data on the recording medium;

~~an encoder configured to encode at least video data having at least one reproduction path;~~ and

a controller, operatively coupled to the optical recording unit, configured to control the optical recording unit to record stream files on the recording medium output from the encoder in a data area of the recording medium, each stream file including video data, each stream file including a portion of video data associated with one of a portion common to the reproduction path[s] and a particular reproduction path among the reproduction paths, each particular reproduction path being one path among multiple reproduction paths in the video data;

the controller configured to control the optical recording unit to record a at least one playlist file on-in-a playlist area of the recording medium, the playlist file for identifying the common reproduction path portion and the particular reproduction path to reproduce, the playlist file including at least one playitem, each the playitem indicating a playing interval from in-point until out-point, the in-point and out-point pointing to time positions on a time axis of the video data; and

the controller configured to control the ~~optical~~ recording unit to record ~~management information~~ clip information files on the recording medium, the clip information files for managing reproduction of the video data ~~in~~ clip information files, the clip information files being recorded ~~in~~ in a clip information area of the recording medium, each one of the clip information files being associated with a ~~corresponding~~ different one of the stream files, each clip information file including a map for the associated stream file, the map mapping a presentation time stamp to an address for at least one entry point in the associated stream file, ~~wherein the~~ clip information file, the ~~playlist~~ file and the ~~stream~~ file is logically separate and ~~include~~ different file extensions.

wherein the video data includes data packets and each data packet has a packet number that differentiates one data packet from another data packet, and the map identifies the address for the at least one entry point by identifying the packet number of the data packets, and a path change among the multiple reproduction paths is performed at the entry point identified by the map.

15. (Currently Amended) An apparatus for reproducing a data structure for managing reproduction of video data ~~having at least one reproduction path~~ recorded on a recording medium, comprising:

~~an optical~~ a reproducing unit configured to reproduce data recorded on the recording medium;

~~a controller, operatively coupled to the optical~~ reproducing unit, ~~configured to control the optical~~ reproducing unit to reproduce stream files from the recording medium, each stream file including video data, each stream file associated with one of a portion common to the reproduction paths and a particular reproduction path among the reproduction paths;

~~the controller configured to control the optical recording unit to reproduce a at least one playlist file from a playlist area of the recording medium, the playlist file for identifying the common reproduction path portion and the particular reproduction path to reproduce, the playlist file including at least one playitem, each the playitem indicating a playing interval from in-point until out-point, the in-point and out-point pointing to time positions on a time axis of the video data; and~~

~~the controller configured to control the optical reproducing unit to reproduce management information at least one clip information file from the recording medium, the at least one clip information file for managing reproduction of the video data from clip information files, the clip information files recorded in a clip information area of the recording medium, each one of the clip information files being associated with a corresponding different one of stream files, each clip information file including a map for the associated stream file, the map mapping a presentation time stamp to an address for at least one entry point in the associated stream file, wherein the clip information file, the playlist file and the stream file is logically separate and include different file extensions; and~~

~~the controller configured to control the reproducing unit to reproduce at least one stream file from the recording medium, each stream file including a portion of the video data associated with one of a common reproduction path and a particular reproduction path, each particular reproduction path being one path among multiple reproduction paths in the video data,~~

~~wherein the video data includes data packets and each data packet has a packet number that differentiates one data packet from another data packet, and the map identifies the address for the at least one entry point by identifying the packet number of the data packets, and a path change among the multiple reproduction paths is performed at the entry point identified by the map.~~

16. (Currently Amended) The computer readable medium of claim 3, wherein only one stream file is associated with each particular reproduction path portion representing a same time period of the video data.

17-18. (Cancelled)

19. (Currently Amended) The method of claim 12, wherein the stream files associated with the particular reproduction paths are interleaved between the stream files associated with the common reproduction paths portion.

20. (Currently Amended) The method of claim 12, wherein the common reproduction path and the particular reproduction path are respectively divided into one or more interleaving units, the interleaving units include packets associated with entry points, and a size of the interleaving unit and a number of entry points in the interleaving unit are determined to meet a buffer occupancy of a reproducing apparatus wherein the stream files have a size to prevent the reproducing apparatus buffer from over-flowing during reproduction of the stream files.

21. (Currently Amended) The method of claim 20-12, wherein the stream files have a size and the number of entry points are determined to prevent a reproducing apparatus buffer from under-flowing or over-flowing during reproduction of the stream files.

22. (Currently Amended) The method of claim 13, wherein the stream files associated with the particular reproduction paths ~~portion~~ are interleaved between the stream files associated with the common reproduction paths ~~portion~~.

23. (Currently Amended) The method of claim 13, wherein the common reproduction path and the particular reproduction path are respectively divided into one or more interleaving units, the interleaving units include packets associated with entry points, and a size of the interleaving unit and a number of entry points in the interleaving unit are determined to meet a buffer occupancy of a reproducing apparatus wherein the stream files have a size to prevent the reproducing apparatus buffer from over flowing during reproduction of the stream files.

24. (Currently Amended) The method of claim ~~23-13~~, wherein the ~~stream files have a size and the number of entry points are determined to prevent a reproducing apparatus buffer from under-flowing or over-flowing~~ during reproduction of the stream files.

25. (Currently Amended) The apparatus of claim 14, wherein the stream files associated with the particular reproduction paths are interleaved between the stream files associated with the common reproduction paths ~~portion~~.

26. (Currently Amended) The apparatus of claim 14, wherein the common reproduction path and the particular reproduction path are respectively divided into one or more interleaving units, the interleaving units include packets associated with entry points, and a size of the interleaving unit and a number of

entry points in the interleaving unit are determined to meet a buffer occupancy of a reproducing apparatus wherein the stream files have a size to prevent the reproducing apparatus buffer from over flowing during reproduction of the stream files..

27. (Currently Amended) The apparatus of claim 26-14, wherein the stream files have a size and the number of entry points are determined to prevent a reproducing apparatus-buffer from under-flowing or over-flowing during reproduction of the stream files.

28. (Currently Amended) The apparatus of claim 15, wherein the stream files associated with the particular reproduction path are interleaved between the stream files associated with the common reproduction path portion.

29. (Currently Amended) The apparatus of claim 15, wherein the common reproduction path and the particular reproduction path are respectively divided into one or more interleaving units, the interleaving units include packets associated with entry points, and a size of the interleaving unit and a number of entry points in the interleaving unit are determined to meet a buffer occupancy of a reproducing apparatus wherein the stream files have a size to prevent the reproducing apparatus buffer from over flowing during reproduction of the stream files..

30. (Currently Amended) The apparatus of claim 29-15, wherein the stream files have a size and the number of entry points are determined to prevent a reproducing

apparatus-buffer from under-flowing or over-flowing during reproduction of the stream files.

31. (Cancelled)

32. (Previously Presented) The computer readable medium of claim 1, wherein the playlist file includes at least one indicator for indicating a reproduction order of the common and particular reproduction path.

33. (New) The apparatus of claim 14, wherein the recording unit includes a pickup to record the vdata on the recording medium.

34. (New) The apparatus of claim 15, wherein the reproducing unit includes a pickup to reproduce the vdata from the recording medium.